

The Breitling Emergency



FCC MEETING

WT Docket No. 14-196

January 23, 2015

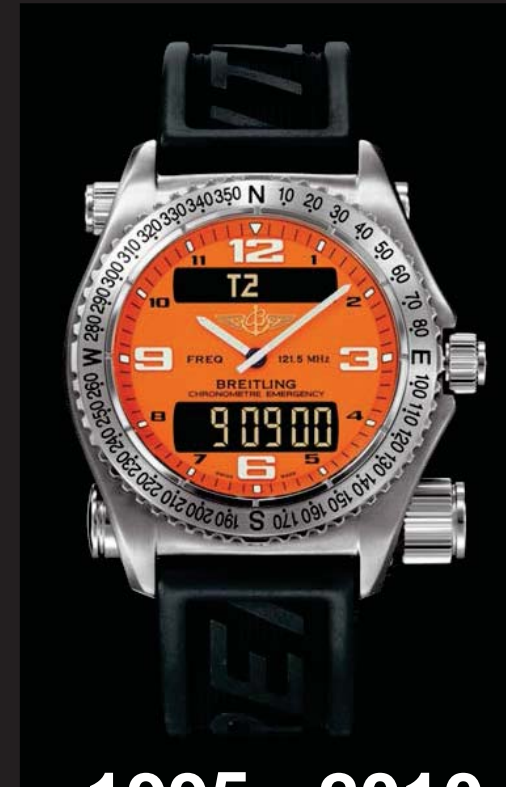
Jean-Paul Girardin, Vice President, Breitling SA

Laura Stefani, Fletcher, Heald & Hildreth, PLC

Thierry Prisset, President, Breitling USA

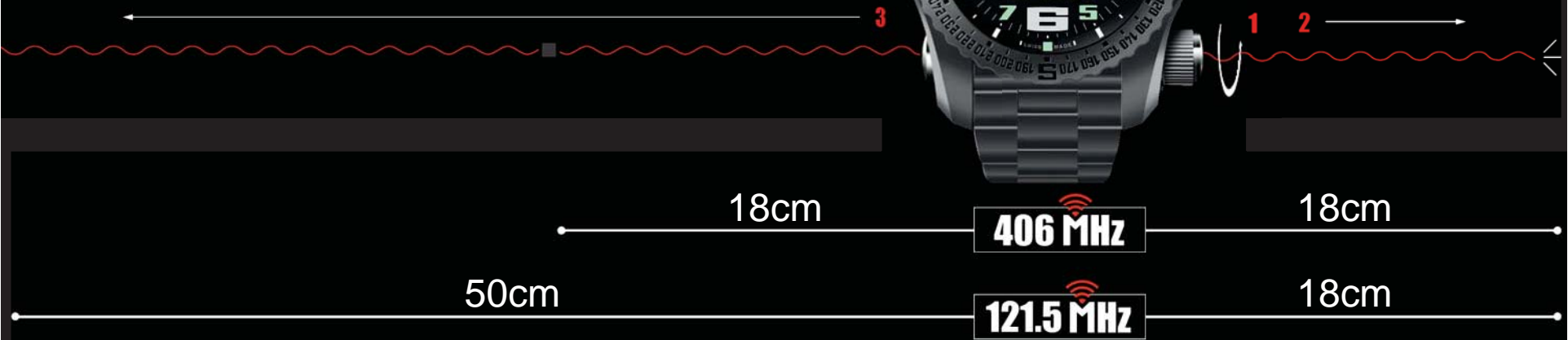
The Original 121.5 MHz Emergency

- 121.5 MHz transmitter
- FCC waiver of Part 87 granted (2001)
- 15 years on the market
- 40,000 sold, all with the required Conditions of Use signed
- Not one false alarm reported, and more than 20 people rescued

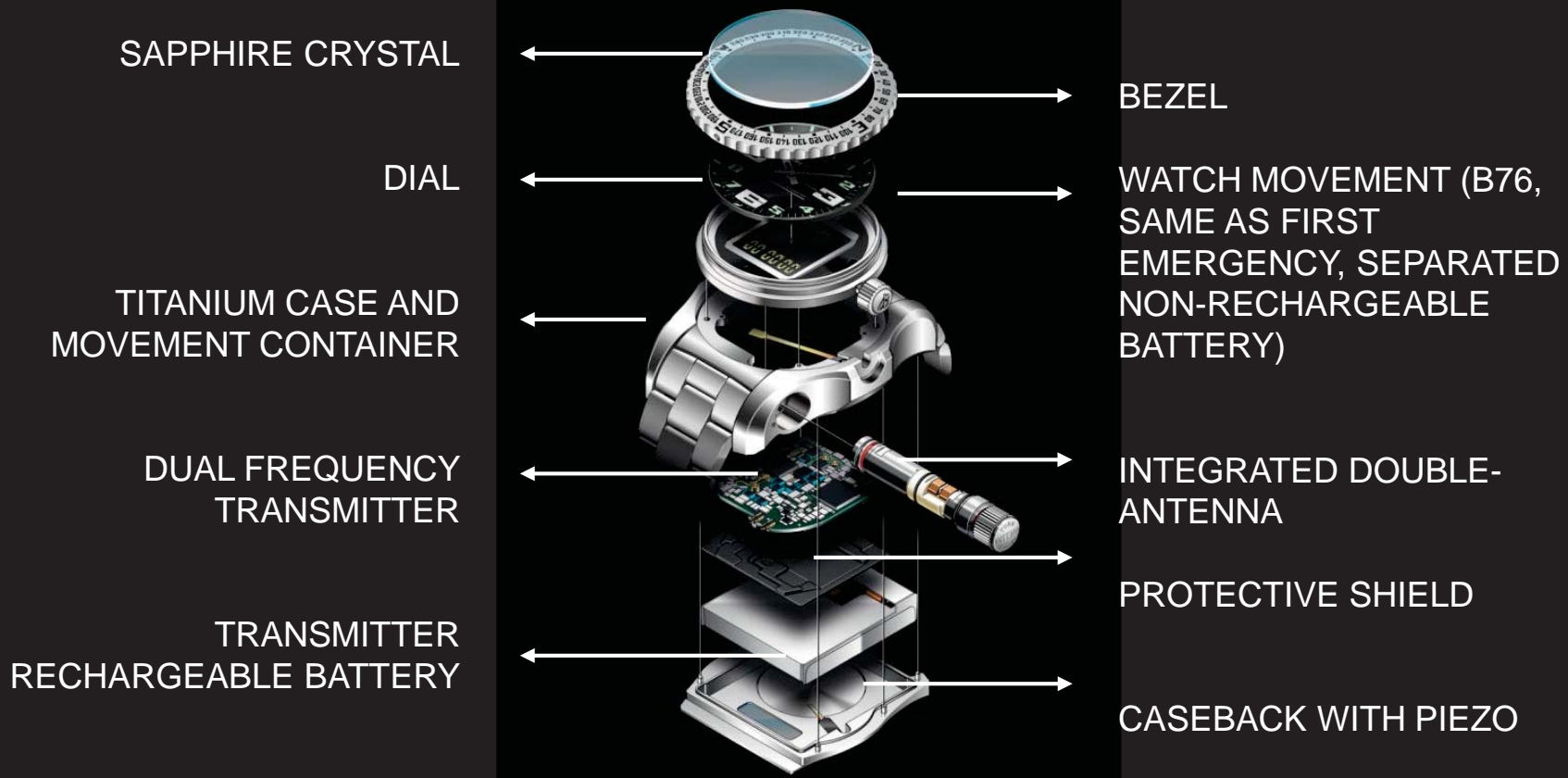


1995 - 2010

The New 121.5/406 MHz Emergency



The New 121.5/406 MHz Emergency



Distribution/Registration System



BREITLING
EMERGENCY name: _____

EMERGENCY CERTIFICATION TEST

1. HOW OFTEN DO YOU NEED TO CHARGE AND TEST THE EMERGENCY TRANSMITTER? (ONE ANSWER)

☐ EVERY TWO MONTHS
☐ EVERY TWO YEARS
☐ EVERY TWO WEEKS
☐ EVERY TWO DAYS

2. DOES THE EMERGENCY NEED SERVICING? (ONE ANSWER)

☐ NO, ONLY IF THE TRANSMITTER HAS BEEN USED
☐ YES, EVERY TWO YEARS, OR AT THE DATE INDICATED ON THE CASE BACK
☐ AFTER EVERY EXPEDITION
☐ EVERY TWO WEEKS

3. WHERE DOES THE CUSTOMER NEED TO REGISTER HIS PERSONAL LOCATOR BEACON?

4. PLEASE LIST THE CONSEQUENCES FOR THE PURCHASER IN CASE OF MISUSE OF THE EMERGENCY TRANSMITTER:

5. EXPLAIN HOW TO USE THE EMERGENCY IN CASE OF LEGITIMATE DISTRESS:

BREITLING
EMERGENCY

CONDITIONS OF USE

The Breitling Emergency watch is equipped with a Personal Locator Beacon (PLB) emergency transmitter. Its use is governed by prevailing national regulations and its sale is subject to the undertaking on the part of the purchaser to comply with the following provisions:

1 The Breitling Emergency watch may only be sold and used by persons who have been informed of and have agreed to the terms and conditions of use stipulated in this document, as well as in the Emergency user manual.

2 The transmitter must only be activated in case of genuine distress and when other means of communication such as cellphones, radios, satellite phones, etc. cannot be used.

3 Any abusive activation of the transmitter may lead to penalties and the user may incur substantial costs, notably including reimbursing the expenses involved in the search operations triggered by the distress signal. The consequences of any such act (that may entail legal proceedings) shall be entirely borne by the owner of the watch – including in the event of misuse by a third party. Neither Breitling SA nor the distributor of the transmitter may thus be held responsible for such consequences.

4 In the event of abusive, negligent, non justified or accidental activation of the transmitter, the cost of the repair of the Breitling Emergency watch, provided such a repair is reasonably feasible, shall be payable by the owner, including during the warranty period. The purchaser is informed of the fact that the cost of repair is equivalent to at least half the recommended retail price of the Breitling Emergency watch.

5 In the event of legitimate use of the transmitter justified by the circumstances of an accident certified by a recognized rescue organization, the Breitling Emergency watch shall be repaired at no cost to the owner.

6 The purchaser is informed of the fact that activating the transmitter of the Breitling Emergency watch sets off an alarm signal and facilitates homing in on the location of the person wearing the transmitter when circumstances so permit. This information expressly specifies that:

- the transmitter cannot serve to establish vocal communication;
- the transmitter must have a direct-visibility link with a satellite and this is only possible on open ground;
- the transmitter is not equipped with a GPS (Global Positioning System); and several hours may elapse before the distress signal is received and the transmitter is located;
- the 121.5 MHz signal is switched off at temperatures below 0°C.

7 Breitling SA does not in any way guarantee the success of the search and rescue operations and may not be held directly or indirectly liable in this respect, except in the event of a serious error committed by Breitling SA.

8 In order to guarantee that search and rescue operations have the required information in case the beacon is activated, the Breitling Emergency watch must imperatively be registered as a PLB with the competent national authorities of the owner's place of residence and corresponding to the country indicated on the back of the watch. Any expenses relating to such a registration or its modification shall be payable by the purchaser.

9 The purchaser also communicates to Breitling SA the personal information requested below and undertakes to inform Breitling SA of any change of ownership, theft, loss or destruction of the watch of which the serial number appears on this document. Such information shall be used by Breitling SA in compliance with Swiss data protection law and shall only be communicated to third parties in order to protect the interests of Breitling SA resulting from the terms and conditions of this agreement.

MODEL REFERENCE: _____ WATCH SERIAL NUMBER: _____

BEACON CODE: _____ COUNTRY CODE: _____

LAST NAME: _____ FIRST NAME: _____

NATIONALITY: _____ TEL. (HOME): _____

TEL. (MOBILE): _____ E-MAIL: _____

ADDRESS: _____ ZIP: _____

CITY: _____ COUNTRY: _____

READ AND APPROVED: _____ RETAILER'S NAME (STAMP): _____

SIGNATURE OF THE PURCHASER: _____ SIGNATURE OF THE AUTHORIZED EMERGENCY SALESPERSON: _____

Authorized Worldwide



Opened countries	Opened countries	Opened countries	Opened countries
Andorra	Hong Kong	Netherlands	United Kingdom
Argentina	Hungary	Oman	
Armenia	India	Paraguay	
Austria	Indonesia	Poland	
Azerbaijan Rep	Iraq	Qatar	
Bahrain	Italy	Romania	
Belarus	Jordan	Saudi Arabia	
Bulgaria	Kazakhstan	Serbia	
Croatia	Kuwait	Slovenia	
Czech Republic	Latvia	Sweden	
Denmark	Lebanon	Switzerland	
France	Liechtenstein	Syria	
Georgia	Luxembourg	Turkey	
Greece	Monaco	United Arab Emirates	

Waiver Request



Waiver of the Section 95.1402 RTCM standards is sought due to size and battery constraint.

- RTCM and COSPAS-SARSAT support was obtained prior to filing.
- U.S., as a party to COSPAS-SARSAT, concurred with the approval and issuance of the Letter of Compatibility.
- Support filed in the docket by more than twenty parties.
- Grant of the waiver will not affect reliable PLB operations; except for battery life, performance is indistinguishable from conventional PLBs.

U.S. SARSAT Comments



1. The U.S. SARSAT Program is concerned that the antenna configuration and wide variability of deployment orientation may not provide adequate signal for reception and detection by the Cospas-Sarsat satellites. When the vertical dipole of monopole antennas are located off ground, as they must be for this beacon, ground reflections will create destructive interference patterns in the antenna patterns, so that the resulting signal to some satellites is markedly decreased resulting in non-detection of the transmission. This effect has not been investigated for this beacon. Therefore, the U.S. SARSAT Program invites submission of test data by Breitling to demonstrate such analysis and results, including any test-coded "Emergency" watch/beacon signals that have been received and processed by the Cospas-Sarsat system.

2. The "Emergency" beacon was tested for the operating temperature range of -20° to +55°C, and complied with all Cospas-Sarsat requirements, except the minimum duration of continuous operation was 18 hours, which is less than the minimum operating lifetime of 24 hours required by Cospas-Sarsat. The de facto United States Personal Locator Beacon (PLB) standard, RTCM STANDARD 11010.2 and its predecessor 11010.1, also requires a minimum of 24 hours of continuous operation. The U.S. SARSAT Program is concerned any further reduction in the operating time may significantly decrease the likelihood of a successful rescue of the user.

- The Emergency was tested as COSPAS-SARSAT requested and per its C/S T.007 standard in the "Operate Without a Ground Plane" configuration.
- Minimum OLT 18 hours corresponds to worst case conditions. The approved C/S IP (LIRB) was applied, including a safety factor of 1.65.

U.S. SARSAT Comments



3. The watch is packaged with a cold weather operations warning pertaining to the 121.5 MHz homing signal temperature limitations. The watch is designed to cut power for 121.5 MHz emission if internal temperature drops below 0°C, which is of great concern to the United States Coast Guard. A clear warning stating “Search and Rescue homing and location capabilities on 121.5 MHz are unavailable when the internal temperature of the watch drops below 0 degrees Celsius” is provided to each purchaser and included in the operator’s instructions.

4. Consumers are notified in writing by Breitling, USA that the device they are purchasing was granted a Cospas-Sarsat (C-S) letter of compatibility vice a Cospas-Sarsat (C-S) Type Approval. A detailed description of the difference between a C-S letter of compatibility and type approval must be clearly articulated, including the limitations of use as set forth in the Letter of Compatibility and listed here:

- RTCM agreed to support the Breitling specific FCC waiver instead of developing rechargeable battery standards for this type of device.
- Below 0°C, 406 MHz will still be available for localization when 121.5 MHz is cut off.
- Benefit of having beacon readily at reach offsets slight battery disadvantage.

U.S. SARSAT Comments



5. In view of the above limitations, the “Emergency” should only be operated by qualified and properly instructed customers. As indicated in the letter from the Federal Office of Civil Aviation of the Swiss Confederation (Ref. 64-13 of 5 April 2013), requesting a waiver of the non-compliances and the issuance of a Letter of Compatibility

in-lieu of a type approval certificate, Breitling will ensure that training on the product is provided to its distribution network and to future owners with the objective of ensuring that users of the product are fully aware of the design features and operational limitations.

- Procedures to ensure proper training are already in place in 43 countries, as was done with the first Emergency.
- A specific Conditions of Use will be used for U.S. customers.

Emergency - Conclusion



The conditions for waiver have been met: The waiver will help to save lives, and therefore is in the public interest, without causing harmful interference or incurring any other significant disadvantage.

THANK YOU!



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- 1** The Breitling Emergency watch may only be sold and used by persons who have been informed of and have agreed to the terms and conditions of use stipulated in this document, as well as in the Emergency user manual.
- 2** The transmitter must only be activated in case of genuine distress and when other means of communication such as cellphones, radios, satellite phones, etc. cannot be used.
- 3** Any abusive activation of the transmitter may lead to penalties and the user may incur substantial costs, notably including reimbursing the expenses involved in the search operations triggered by the distress signal. The consequences of any such act (that may entail legal proceedings) shall be entirely borne by the owner of the watch – including in the event of misuse by a third party. Neither Breitling SA nor the distributor of the transmitter may thus be held responsible for such consequences.
- 4** In the event of abusive, negligent, non-justified or accidental activation of the transmitter, the cost of the repair of the Breitling Emergency watch, provided such a repair is reasonably feasible, shall be payable by the owner, including during the warranty period. The purchaser is informed of the fact that the cost of repair is equivalent to at least half the recommended retail price of the Breitling Emergency watch.
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 - the transmitter cannot serve to establish vocal communication;
 - the transmitter must have a direct-visibility link with a satellite and this is only possible on open ground;
 - the transmitter is not equipped with a GPS (Global Positioning System); and several hours may elapse before the distress signal is received and the transmitter is located.
- 7** COSPAS-SARSAT rigorously tests and “type approves” beacon models before they go into production to ensure that production beacons sold to the public can be expected to operate under a variety of extreme conditions. A few beacons, with exceptional characteristics, may not meet all of the standards for type-approval, but may still be approved for use with COSPAS-SARSAT by virtue of a Letter of Compatibility (LoC).

The Emergency watch was granted a Letter of Compatibility (TAC-717) on April 18th, 2014, meaning it is perfectly suitable for its particular use, but extra care must be taken to ascertain that this is the case. The following requirements are part of the Letter of Compatibility:

 - The Emergency watch shall be set for operation in such a manner that neither of the antenna sections makes contact with ground or any conductive surface, since this might affect the antenna radiation pattern.
 - The Emergency watch was not designed to operate while in water or when the watch is still worn on the wrist.
 - The Emergency watch was tested for operating temperature range of -20°C to +55°C (-4°F to +131°F), and complies with all COSPAS-SARSAT requirements, except for the minimum duration of continuous operation is 18 hours, which is less than the minimum operating lifetime of 24 hours required by COSPAS-SARSAT.
 - The Emergency watch provides for the operation of an integrated 121.5 MHz radio-locating transmitter only at temperatures above 0°C (32°F), whereas at temperatures below 0°C (32°F), the 121.5 MHz homer is automatically disabled.
 - The Emergency watch uses a proprietary rechargeable battery pack. It is recommended that the battery charge be properly maintained by the user by recharging battery at regular intervals, not exceeding recommended time between charges of 2 months.



CONDITIONS OF USE

8 Breitling SA does not in any way guarantee the success of the search and rescue operations and may not be held directly or indirectly liable in this respect, except in the event of a serious error committed by Breitling SA.

9 In order to guarantee that search and rescue operations have the required information in case the beacon is activated, **the Breitling Emergency watch must imperatively be registered as a PLB with the competent national authorities** of the owner's place of residence and corresponding to the country indicated on the back of the watch or, for countries that allow it, directly on the online international 406 MHz Beacon Registration Database (IRBD) at www.406registration.com. Any expenses relating to such a registration or its modification shall be payable by the purchaser.

10 The purchaser also communicates to Breitling SA the personal information requested below and undertakes to inform Breitling SA of any modification, change of ownership, theft, loss or destruction of the watch of which the serial number appears on this document. Such information shall be used by Breitling SA in compliance with Swiss data protection law and shall only be communicated to third parties in order to protect the interests of Breitling SA resulting from the terms and conditions of this agreement.

MODEL REFERENCE

WATCH SERIAL NUMBER

UIN

COUNTRY CODE

LAST NAME

FIRST NAME

NATIONALITY

TEL. (HOME)

TEL. (MOBILE)

E-MAIL

ADDRESS

ZIP

CITY

COUNTRY

READ AND APPROVED ON

RETAILER'S NAME
(STAMP)

SIGNATURE OF THE PURCHASER

SIGNATURE OF THE AUTHORIZED
EMERGENCY SALESPERSON



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E-MAIL

ADDRESS

ZIP

CITY

COUNTRY

READ AND APPROVED ON

RETAILER'S NAME
(STAMP)

SIGNATURE OF THE PURCHASER

SIGNATURE OF THE AUTHORIZED
EMERGENCY SALESPERSON



BREITLING EMERGENCY



Waiver Request RTCM STANDARD 11010.2

Product : Breitling Emergency PLB

The Breitling Emergency is a PLB class-2 worn on the wrist. So it is permanently accessible to the user and thus guarantees that it can be activated in any circumstances.

The Breitling Emergency PLB got a letter of compatibility from Cospas-Sarsat and received the TAC Number 717.

Due to the miniaturization of the components of the beacon (i.e. battery, electronic circuit, antenna), it has not been possible to satisfy to all the requirements of the RTCM Standard 11010.2.

The present document lists the different points of the RTCM Standard 11010.2 where a waiver is requested by Breitling.

Sub clause	Statement	Comment
4.4.1	<p>PLBs shall have, as a minimum, integral manual controls to operate the device in the following modes:</p> <p>OFF In the OFF mode, the PLB is deactivated.</p> <p>ON In the ON mode, the PLB is activated.</p> <p>TEST See paragraph 4.4.2.</p>	<p>Waiver request due to product design constraints regarding one time operation and switch off.</p> <p>OFF mode: After activation, in order to reduce the 406MHz and 121.5MHz transmission power the antennas must be cut or wrapped around the body of the EUT.</p> <p>On mode: Activated when extracting the antenna.</p> <p>The TEST function is only possible when the device is installed in the battery charger. An internal check is made (but no transmission) and the status of the check is indicated on LEDs on the charger.</p>
4.4.2	<p>A separate test switch or switch position is required for this test function. The test switch (or similar control) shall automatically return (e.g., spring-loaded switch) from the test position and shall not pass through the ON position.</p>	<p>Waiver request due to product design constraints regarding self-test function. The use of a separate charger which launches the self-test can be considered as a "separate test switch"</p>
4.4.3	<p>The PLB shall have its own primary (non-rechargeable) battery and shall not depend upon any external source of power for its operation when activated. The battery shall be an integral part of the equipment. Replacement of the battery, if user-replaceable, should be possible with relative ease, and any interface connections required shall be such as to prevent reversed polarity or incorrect installation. Provision shall be made to ensure watertight integrity upon replacement of the battery.</p>	<p>Waiver request due to product design regarding the use of the lithium rechargeable battery.</p> <p>Cospas-Sarsat has introduced an "INTERIM PROCEDURE FOR TYPE APPROVAL OF 406 MHz BEACONS EQUIPPED WITH LI-ION RECHARGEABLE BATTERIES C/S IP (LIRB)".</p> <p>Breiting has successfully passed the requirements of that procedure. Furthermore, each recharge of the battery with the dedicated charger concludes by a self-test which ensures the beacon is operational.</p>

Sub clause	Statement	Comment
4.4.3	The PLB manufacturer shall establish a useful life and an expiration date for batteries. The useful life is defined as the period of time after the date of battery manufacture that the battery will continue to meet the input power requirements of the PLB.	Waiver request due to product design regarding the use of the lithium rechargeable battery. Refer to the document "OLT measurement based on RTCM Standard 11010.2 (4.4.3)" which is enclosed in the Annex A of the TUV Report (provided on request). The battery replacement date is prominently visible on the back of the watch.
4.5.1	The PLB case shall be predominantly a highly-visible yellow/orange color.	Waiver request due to product design constraints regarding the outward appearance and the material of the device. As the beacon is permanently worn on the wrist, a highly-visible color is unnecessary as the user has not to search for the beacon in case of emergency.
4.5.2.2	All labelling essential to the safe and effective operation of the PLB shall be in high contrast to the background of the text or pictograph. Labelling and Pictograph instructions essential to the safe and effective operation of the PLB shall be sized such that they are readable by persons having 20/20 normal vision at a minimum viewing distance of 150 mm with illumination no greater than 0.3 lux. Items a) through h) in 4.5.2.2.1 below and any other information required for the safe and effective operation of the PLB shall be visible on the PLB, or their location identified and accessible by a single simple action on the part of the operator (e.g. lifting or removing a protective cover over the control panel). Such information shall not be hidden by any permanent or semi-permanent accessory or ancillary devices normally attached to or installed on or around the body of the PLB. (A separate storage case from which the PLB can be easily removed with one hand for activation is not included in this requirement.)	<p>Waiver request due to product design constraints regarding the applicability and suitability of all labelling requirements.</p> <p>The Emergency PLB is a personal beacon. All buyers will be instructed about the activation of the PLB.</p> <p>However, the activation process is very simple: Unscrew and pull the two antennas! (See also next entry.)</p>

Sub clause	Statement	Comment
4.5.2.2.1	The outside of the PLB shall be marked indelibly and legibly with the following: a) Concise, unambiguous instructions for operating and testing of the PLB that shall be understandable by untrained personnel.	The three steps necessary to activate the beacon are engraved on the watch. All the buyers of the Breitling Emergency PLB will be instructed about the activation of the PLB. A manual and a USB key with an explanation movie are also delivered with the beacon.
4.5.2.2.1	c) The warning, or equivalent: NOTICE TO THE PUBLIC DO NOT MOVE IF FOUND REPORT POSITION TO AUTHORITIES	Waiver request due to product design constraints regarding the applicability. There is not enough space to engrave such text.
4.5.2.2.1	f) Instructions to register the PLB with the appropriate authority and the contact details of the authority.	Waiver request due to product design constraints regarding the applicability and suitability. Customers will be instructed by a trained vendor and make aware of necessity to register. A separate sheet dedicated to the registration process is enclosed with the beacon. See at the end of this document.
4.5.2.2.1	g) Space for any required registration sticker	Waiver request due to product design constraints regarding the applicability and suitability of all labelling requirements. There is not enough space for a decal.
4.5.2.2.2	e) If there exists a condition or operating circumstance which has been identified by the manufacturer or regulating authorities that could substantially affect the alerting or self-locating performance of the PLB, then information appropriate to prevent this occurring shall appear in a conspicuous location appropriate to the prevention or remediation by the operator of said condition or operating circumstance (e.g. the necessity to orient the antenna vertically upward if orientation of the antenna is adjustable).	There is no possibility to permanently attach special instructions to the PLB. There is a mention of two important points in the manual. 1) Once activated, the beacon will broadcast at least during 18 hours. For special situations when the beacon is at temperatures below 0°C/32°F, the 121.5 MHz signal is automatically switched off in order to guarantee the broadcast duration for the 406 MHz signal. 2) The two antenna sections must be kept vertical, with the short section in all circumstances pointing upwards and the long section pointing downwards at a sufficient height to avoid the antenna touching ground (the far end of the long section must be 5–10 cm/2–4 in off the ground). The Emergency is not designed to be worn on the wrist when the beacon is activated.

Sub clause	Statement	Comment
4.5.2.2.2	f) The phone number(s) to be used to report inadvertent activation negating the need for the distress alert.	Waiver request due to product design constraints regarding the applicability and suitability of all labelling requirements. A separate sheet enclosed with the beacon mentions the phone number for USA. See at the end of this document.
A.13.1	Operational Life Test. The operational life test is intended to establish, with reasonable confidence that the PLB will function for a minimum of 24 hours under worst case conditions using a battery pack that has reached its expiration date, after being stored throughout its useful life at ambient temperatures	Waiver request due to product design regarding the operational life time. As the beacon is designed to be permanently worn, it cannot be too big or too heavy. So the capacity of the battery, which is directly related to its dimension, is sufficient to guarantee 18 hours emission in the worst case conditions. Cospas-Sarsat granted a letter of compatibility regarding this point.
A.16	121.5 MHz auxiliary radio-locating device transmitter test ... Unless otherwise specified, all auxiliary radio-locating device transmitter signal characteristics (specified in Table 2) shall be measured at the minimum and maximum operating temperatures.	Waiver request due to product design regarding the minimum temperature of the 121.5 MHz emission. So as to guarantee the minimum operating lifetime of 18 hours if the battery is at its end of life and the temperature at -20°C it has been necessary to make a choice to save energy. The 121.5MHz emission cuts off if the internal temperature of the beacon is under 0°C. (The LEOSAR system allows a localization of the beacon by Doppler Effect, and SAR teams are now often equipped with 406MHz homing devices.)

Sub clause	Statement	Comment
A.16.2	<p>121.5 MHz auxiliary radio-locating device transmitter test – Transmitter Duty Cycle. Continuous (100%) except that it shall be interrupted for up to a maximum of 2 seconds encompassing the 406 MHz burst transmission.</p>	<p>Waiver request due to product design regarding the Duty cycle.</p> <p>So as to ensure the 18 hours emission, and due to successful use of Eurocae recommendation (*) during live trials and actual rescue events (more than 20 people found with the first Breitling Emergency 121.5 MHz only) the waiver is requested to transmit 121.5 MHz homing signal 775ms every 2.275s (Transmitter Duty Cycle 34%).</p> <p>(*) ELT spec from EUROCAE, ED-62A:2009 Clause 3.1.3.1 has a note that states: "It has been shown that an ON period of 0.75 seconds followed by an OFF period of 1.5 seconds gives satisfactory results".</p>

Grenchen, September 22, 2014


 BREITLING SA
 Jean-Paul Girardin
 Vice-President



Annex 1: Registering instruction enclosed in the beacon package for US beacons

IMPORTANT: the Emergency must be registered at the time of purchase in accordance with the national procedures in force. The beacon must be registered in the owner's country of residence.

PLB registration in the U.S.A.

Cospas-Sarsat TAC Number for the Emergency: 717

- 1) Online registration directly on: www.beaconregistration.noaa.gov
- 2) Registration by filling in the enclosed paper form, and then sending it to the competent authority as follows:
 - By post:
NOAA/SARSAT
NSOF, E/SP3
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Suitland, MD 20746
 - By fax: 301-817-4565

Further information can be found on www.sarsat.noaa.gov
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International Satellite System for Search and Rescue
Système international de satellites pour les recherches et le
sauvetage
Международная Спутниковая Система Поиска и Спасания

CS14/80/F510 (Breitling)

18 August 2014

Mr Jean-Paul Girardin
VICE PRESIDENT

BREITLING SA
P.O. Box 1132
Schlachthausstrasse 2
2540 GRENCHEN
Switzerland

Subject: Letter of Compatibility for the 406 MHz Beacon Model 'EMERGENCY', TAC-717

Dear Mr Girardin,

I am pleased to confirm that, with effect from 18 April 2014, the Class-2 406 MHz personal locator beacon (PLB) model 'EMERGENCY' manufactured by Breitling S.A., Switzerland has been declared compatible with, and may be used for operation with, the Cospas-Sarsat 406 MHz system, with the restrictions detailed below. This confirmation is based on the results of testing of the beacon conducted at the TÜV SÜD test facility, Fareham, UK between August 2012 and March 2014.

The beacon was successfully tested and complied with Cospas-Sarsat requirements, as defined in the following Cospas-Sarsat standards:

- C/S T.001 Specification for Cospas-Sarsat 406 MHz Distress Beacon
Issue 3 – Rev. 13, October 2012,
- C/S T.007 Cospas-Sarsat 406 MHz Distress Beacon Type Approval Standard
Issue 4 – Rev. 7, October 2012,
- C/S IP (TCXO) Interim Procedure for the Determination of Compliance of 406 MHz Beacons
Equipped with a TCXO with Cospas-Sarsat Type Approval Requirements
Revision 5, October 2013, and

C/S IP (LIRB) Interim procedure for Type Approval of 406 MHz Beacons Equipped with Li-Ion Rechargeable Batteries, Revision 3, October 2013.

The EMERGENCY is a wrist-worn 406/121.5 MHz emergency PLB which shares casing with an analog-digital Breilting chronograph. The chronograph and the emergency beacon are fully independent.

The beacon includes the following features:

- Cospas-Sarsat beacon operating frequency: 406.040 MHz;
- Auxiliary 121.5 MHz radio-locating transmitter (output power: 15 dBm, transmitter duty cycle: 33%), operating at temperatures above 0°C and automatically disabled at temperatures below 0°C;
- Integrated deployable 406/121.5MHz transmitting antenna;
- A rechargeable battery which shall be periodically recharged using a specially-designed charger provided with the beacon;
- A self-test capability, which is automatically activated at the end of the full battery recharge;
- Automatic beacon activation upon deployment of integrated antenna.

The beacon is approved for message encoding with the User protocol variant for PLBs with Serial Number.

Limitations of Use

The EMERGENCY with the integral antenna was tested in configuration corresponding to the PLB operating while placed above ground, which corresponds to the EMERGENCY manufacturer-declared intended operational scenarios. The watch shall be set for operation in such a manner that neither of the antenna sections make contact with ground or any conductive surface, since this might affect the antenna radiation pattern.

The EMERGENCY was not designed to operate while in water or when the watch is still worn on the wrist. The user manual clearly states that for the antenna deployment and beacon operation the watch must be taken off the wrist.

The EMERGENCY beacon was tested for the operating temperature range of -20° to +55°C, and complied with all Cospas-Sarsat requirements, except for the minimum duration of continuous operation was 18 hours, which is less than the minimum operating lifetime of 24 hours required by Cospas-Sarsat.

The EMERGENCY beacon provides for the operation of an integrated 121.5-MHz radio-locating transmitter only at temperatures above 0°C, whereas at temperatures below 0°C the 121.5 MHz homer is automatically disabled.

The EMERGENCY uses a battery pack comprising one lithium-ion rechargeable battery (Li-Ion NMC/Si, Prollion INP63438) produced by Prollion, France. As indicated in the EMERGENCY user manual, it is recommended that the battery charge be properly maintained by the user by

recharging battery at regular intervals, not exceeding recommended time between charges of 2 months.

In view of the above limitations, the EMERGENCY should only be operated by qualified and properly instructed customers. As indicated in the letter from the Federal Office of Civil Aviation of the Swiss Confederation (Ref. 64-13 of 5 April 2013), requesting a waiver of the non-compliances and the issuance of a Letter of Compatibility in-lieu of a type approval certificate, Breitling will ensure that training on the product is provided to its distribution network and to future owners with the objective of ensuring that users of the product are fully aware of the design features and operational limitations.

Disclosure of Limitations of Use

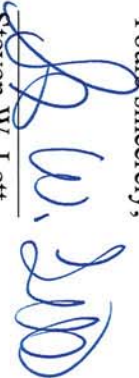
Cospas-Sarsat requests that the beacon manufacturer, Breitling S.A., fully disclose the limitations of the beacon's operation to Administrations when seeking authorisation to market the EMERGENCY within the Administrations' jurisdiction and to users. Please note that this Letter of Compatibility does not authorise the operation or sale of this beacon model which remains the responsibility of competent Administrations.

The EMERGENCY has been assigned the Cospas-Sarsat type reference number 717. Numbers in the 700 series are reserved for special-use beacons which, due to some of their special features, might not satisfy some of the Cospas-Sarsat beacon requirements in all situations.

This confirmation of compatibility is issued on the basis of the manufacturer's commitment that all EMERGENCY devices will be identical to the units provided for testing. Any change to the design or components of the beacon may affect the validity of this Letter of Compatibility and should be reported to the Cospas-Sarsat Secretariat for evaluation.

A copy of the EMERGENCY characteristics summary being published on the Cospas-Sarsat website is attached.

Yours sincerely,


Steven W. Lett,
Head, Cospas-Sarsat Secretariat

Encl.: Web-report for the EMERGENCY, on 1 page.

CC: The Cospas-Sarsat Parties (Canada, France, Russia and USA);
TUV SÜD test facility (Fareham, UK).

TAC Number	717	TAC Date	18-APR-2014	TAC Rev. date	
Beacon Model Name	EMERGENCY				
Additional Names	---				
Manufacturer	Breitling SA				
Tx Frequencies	406.040 MHz				
In Production	in production		Class	2	
Type	PLB		Tested Life (hours)	18 hours	
Battery	Lithium-Ion LIRB, Li-Ion NMC/Si, PROLLION INP63438 rechargeable battery, manufacturer: Prolion, France				
Battery Legend: Battery cell manufacturer, Cell chemistry, Cell model, No. of cells, Cell size.					
Protocols tested	U - User.				
Self Test	yes	Self Test RF	yes	Self Test RF (Short/Long)	short
Self Test Format Flag	short	Self Test Consistent with 15 Hex ID	yes		
Homer Freq	121.5 MHz		Homer Duty Cycle	33%	
Homer Power	15 dBm				
Strobe Light	no	Strobe Brightness	---	Strobe Duty Cycle	---
Nav Device	No	Nav Device Model	---		
Separable Antenna	no	Antenna Model	---		
Additional functions	battery charger				
General comments	<p>EMERGENCY is a wrist-worn 406/121.5 MHz emergency PLB which shares casing with a Breitling analog-digital chronograph. The chronograph and the emergency beacon are fully independent. 121.5 MHz homer operates only at temperatures above 0°C, homer is automatically disabled at temperatures below 0°C. Designed for operation only above ground. Not designed to operate while in water or when the watch is still worn on the wrist. The Li-Ion rechargeable battery shall be fully charged, the battery recharging shall be performed at regular, not exceeding 2 months intervals. Minimum duration of operation is 18 hrs. Approved for message encoding with the User protocol variant for PLBs with Serial Number. Designated for use of qualified and properly instructed customers.</p>				
TAC rev history	---				